

ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025



LOAD BEARING PRIMED AND PAINTED STEEL STRUCTURES

Pre-EPD

EPD of multiple products, based on average product

Rakennustieto EPD

EPD number: RTS_464_26

Published: 19.03.2026

Valid until: 19.09.2027

Handwritten signature of Jukka Seppänen in blue ink.

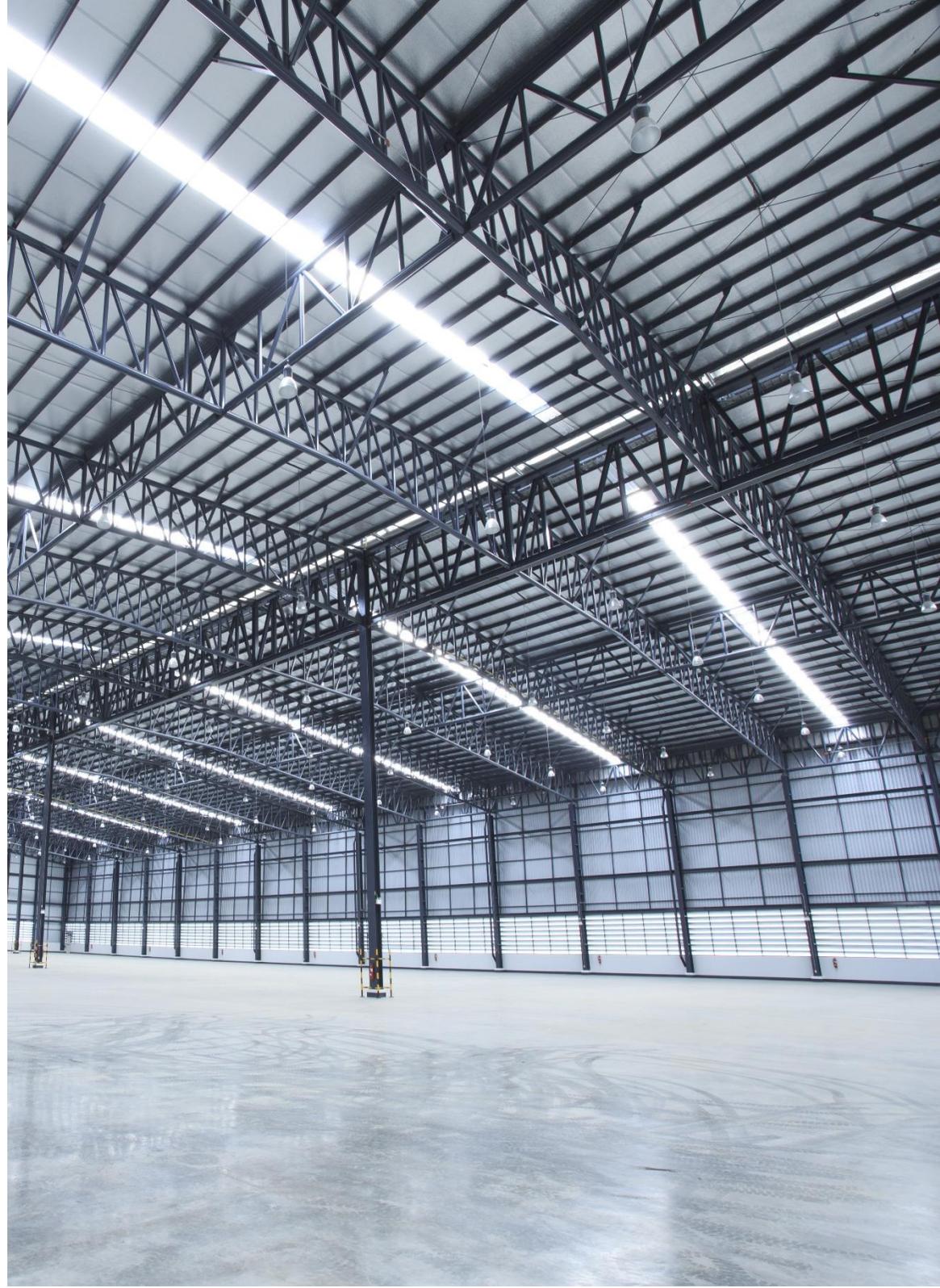
Jukka Seppänen
RTS EPD Committee Secretary

Handwritten signature of Laura Apilo in blue ink.

Laura Apilo
Managing Director



LCA SUPPORT



GENERAL INFORMATION

MANUFACTURER INFORMATION

Manufacturer	Monik OÜ
Address	Suur Sõjamäe 30c, 11415 Tallinn, Estonia
Contact details	info@monik.ee
Website	www.monik.ee

PRODUCT IDENTIFICATION

Product name	Load bearing primed and painted steel structures
Place of production	Suur-Sõjamäe 30d, 11415 Tallinn, Estonia
Period of data	January 2026

The EPD owner has the sole ownership, liability, and responsibility for the EPD. Construction products EPDs may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

EPD INFORMATION

EPD program operator	Rakennustieto EPD, Malminkatu 16 A, Helsinki, Finland https://ymparisto.rakennustieto.fi/rakennustiedon-edon-epd
-----------------------------	--

Product category rules	EN 15804, RTS PCR (12.11.2024)
Category of EPD	Third party verified pre-EPD
Scope of the EPD	Cradle to gate with options (A4), modules C1-C4 and D
EPD author	Kirke Maria Lepik, LCA Support
EPD verification	Independent verification of this EPD and data, according to ISO 14025: <input type="checkbox"/> Internal certification <input checked="" type="checkbox"/> External verification
Verification date	10.03.2026
EPD verifier	Sigita Židonienė, Vesta Consulting UAB

ABOUT THE MANUFACTURER

Monik OÜ is an Estonian manufacturing company specializing in structural steel constructions, crane parts, machines and components for the various industries. We produce a wide range of building steel structures, including columns, beams, trusses, bracings, and custom assemblies, all manufactured in accordance with EN 1090-2 up to Execution Class EXC4 and supplied with CE-marking. Monik OÜ operates under a certified ISO 9001:2015 quality management system and maintains EN ISO 3834-2 certified welding processes, ensuring consistent quality, traceability, and professional execution across all projects.

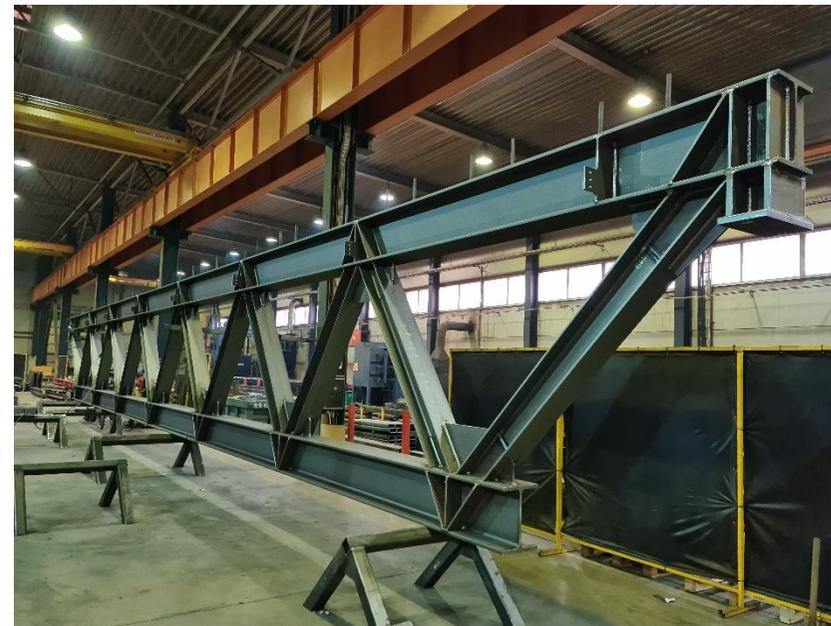
PRODUCT INFORMATION

PRODUCT DESCRIPTION AND AVERAGING

The EPD covers building steel constructions manufactured from structural steel commonly used in residential, commercial, and industrial buildings. The product assessed in this EPD represents an average of steel structure variations produced by the company since 2026, reflecting a reduced environmental impact achieved through the use of recycled metal, electricity from renewable sources, and improvements in the manufacturing process (compared to Monik's EPD RTS_177_22).

The scope of the declaration includes primed and painted structural steel components such as columns, trusses, beams, bracings, supports, and various secondary steel elements. These structures are produced in a wide range of dimensions and configurations, depending on the specific requirements of individual projects.

Due to the diversity of project specifications, a single "typical" order cannot be defined. However, the overall manufacturing processes applied to all product variations follow a consistent and standardized sequence. Consequently, this EPD represents an aggregated average for a standard steel structure project order and is not intended to describe the performance of any one specific project or structure type. Variation in environmental impacts is less than 10%.



PRODUCT APPLICATION

Primed and painted steel structures are used as frame structures for private, public, and industrial buildings. The main market areas are Scandinavia.

TECHNICAL SPECIFICATIONS

Main steel material grades used are S235 - S420. Dimensions of the products vary based on specific project requirements. The steel structures are produced in Tallinn, Estonia at the MONIK factory.



PRODUCT STANDARDS

The steel structures covered by this EPD are fabricated in accordance with the requirements of EN 1090-2: Execution of Steel Structures and Aluminium Structures - Part 2: Technical Requirements for Steel Structures, up to Execution Class (EXC) 4. All products are delivered with CE marking in compliance with Regulation (EU) No. 305/2011 (Construction Products Regulation), demonstrating conformity with the applicable harmonised technical specification.

The company operates a Factory Production Control (FPC) system that meets the requirements of EN 1090-1, ensuring consistent production, traceability, and verification of structural steel components. The overall quality management system is certified to ISO 9001:2015, covering all processes related to design coordination, procurement, fabrication, inspection, and final product delivery.

Welding activities are performed under a certified welding quality management system in accordance with EN ISO 3834-2: Comprehensive Quality Requirements for Fusion Welding of Metallic Materials. This includes qualification of welding procedures (WPQR), welder qualifications (WQ), supervision by competent welding coordinators in line with EN ISO 14731, and full documentation of welding parameters, consumables, and inspection records.

Together, these certifications ensure that all steel structures are manufactured under controlled conditions, using qualified personnel, approved procedures, and fully traceable materials, guaranteeing structural integrity, durability, and compliance with European construction standards.

PRODUCT CONTENT DECLARATION

Product materials	Weight, kg	Recycled*, mass-% of product	Renewable, %	Region of origin
Steel	985	94,5%	0	EU, Middle-East
Welding wire	7	0	0	Europe
Coating materials	8	0	0	FI
TOTAL	1000	94,5%	0	

*The share of pre-consumer and post-consumer recycled material is unknown.



PACKAGING AND BIOGENIC CARBON CONTENT

The product is packaged using wooden beams (6 kg per 1 ton of product).

	Biogenic carbon, kg C
Product	0
Packaging	2,7

ADDITIONAL TECHNICAL INFORMATION

Further information can be found at www.monik.ee



PRODUCT LIFE-CYCLE

MANUFACTURING AND PACKAGING (A1-A3)

After arrival to Monik factory, all materials are cleaned using the shotblasting machine and then sent to the prefabrication department. According to project documentation and requirements, the material is cut using gas cutting machines and then bent and drilled at the factory. Hydraulic oils are used to reduce the wear of the machines. Prefabricated details are sent for assembling and welding. Welding works are carried out either manually or with welding machines, depending on the type of the structures. The main method of surface coating in the factory is wet painting. The cleaned products are primed and painted using mainly two-component paints. Before the painting process, the surfaces of welded products are cleaned in a chamber using steel shotblasting. After drying the painted surfaces, the product is packaged and transported to the end user.

TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final products delivery to construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions.

The final products are transported to various cities in Scandinavia. The transport distances are 380 km by ferry and 85 km by lorry. A weighted average is used in the calculations.

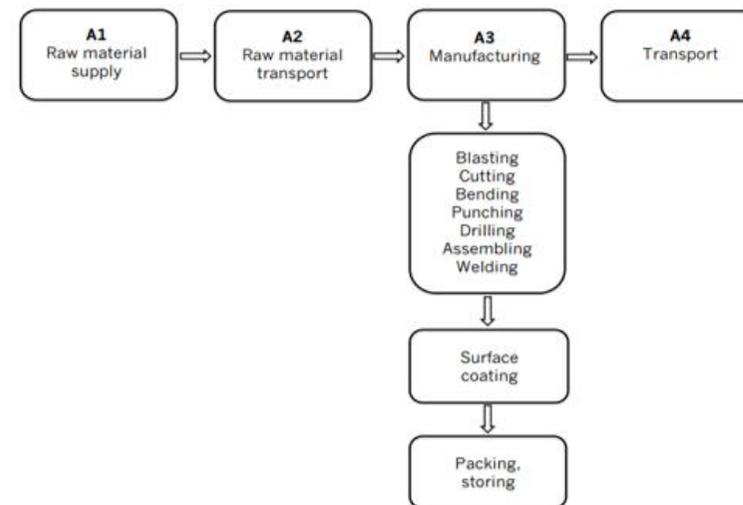
PRODUCT USE AND MAINTENANCE (B1-B7)

This EPD does not cover the use phase. Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

At the end-of-life, the energy required for the demolition (C1) is assumed to be 1,1 kWh as per EPD International’s PCR v2.0.1. It is assumed that the product is transported for 50 km by lorry (C2) to the nearest waste treatment facility. Since steel is a highly recyclable material, 95% of the product is assumed to be recycled (C3) and 5% landfilled (C4) (World Steel Association, 2022). The recycling of primary materials is considered in module D.

MANUFACTURING PROCESS



Load bearing primed and painted steel structures

LIFE-CYCLE ASSESSMENT

LIFE-CYCLE ASSESSMENT INFORMATION

Period for data	January 2026
-----------------	--------------

DECLARED UNIT

Declared unit	1 tonne
Mass per declared unit	1000 kg
Mass of packaging	6 kg

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0
Biogenic carbon content in packaging, kg C	2,7

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	99	EU
Minerals	0	-
Fossil materials	<1	EU
Bio-based materials	0	-

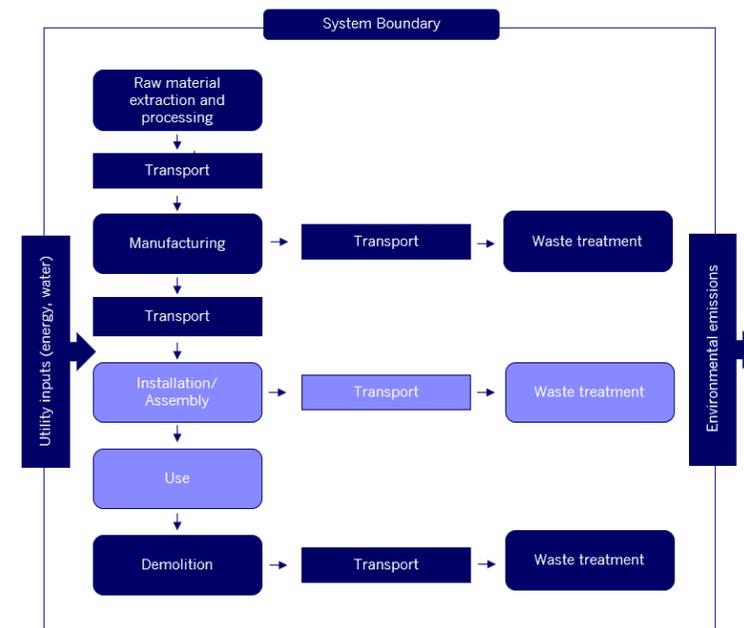
The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

SYSTEM BOUNDARY

This EPD covers the cradle to gate with options (A4), modules C1-C4 and module D.

Product stage	Assembly stage		Use stage										End of life stage				Beyond the system boundaries		
	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	D	D
x	x	x	x	ND	ND	ND	ND	ND	ND	ND	ND	ND	x	x	x	x	x	x	x
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstr./demol.	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling	

Modules not declared = ND.



CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the EN 15804:2012+A2:2019 and the applied PCR. The study does not exclude any hazardous materials or substances.

The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes for which data is available are included in the calculation. No material has been excluded by cut-off or due to lack of data. The production of capital equipment, construction activities, and infrastructure, maintenance and operation of capital equipment, personnel-related activities, energy and water use related to company management and sales activities are excluded.



ALLOCATION

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. Flows measured on factory level (manufacturing energy and waste) were allocated per production volume. Co-product allocation was not applied.

DATA QUALITY ASSESSMENT

The data used in this assessment are considered to be of good and very good quality and representative of the declared product, production processes, and reference year. The life cycle inventory data are based on accurate production data. Environmental data for the main raw materials are supplier-specific, covering the majority of impacts (more than 90% of GWP-fossil in A1-A3). Background data were selected to be representative of the relevant processes.

ENVIRONMENTAL IMPACT DATA

Estimated impact results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks.

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2

Impact category	Unit	A1	A2	A3	A1-A3	A4	C1	C2	C3	C4	D
GWP – total	kg CO ₂ e	8.66E+02	3.53E+02	6.79E+01	1.28E+03	6.18E+01	3.99E-01	5.39E+00	2.15E+01	3.19E-01	-2.17E+01
GWP – fossil	kg CO ₂ e	7.91E+02	3.53E+02	4.74E+01	1.19E+03	6.18E+01	3.99E-01	5.38E+00	2.14E+01	3.12E-01	-2.17E+01
GWP – biogenic	kg CO ₂ e	6.98E-01	6.39E-02	1.55E-01	9.17E-01	9.82E-03	7.59E-05	1.22E-03	1.08E-01	7.01E-03	5.54E-02
GWP – LULUC	kg CO ₂ e	7.50E+01	1.35E-01	2.04E+01	9.55E+01	2.81E-02	4.08E-05	2.41E-03	2.64E-02	1.78E-04	-3.42E-03
Ozone depletion pot.	kg CFC ₁₁ e	7.44E-06	6.67E-06	1.25E-06	1.53E-05	9.80E-07	5.92E-09	7.95E-08	2.84E-07	9.04E-09	-7.22E-08
Acidification potential	mol H ⁺ e	3.70E+00	2.47E+00	7.49E-02	6.26E+00	1.39E+00	3.56E-03	1.84E-02	2.55E-01	2.21E-03	-8.85E-02
EP-freshwater	kg Pe	1.01E-01	2.13E-02	8.50E-03	1.30E-01	2.40E-03	1.28E-05	4.19E-04	1.42E-02	2.57E-05	-1.58E-02
EP-marine	kg Ne	4.08E+00	6.17E-01	2.13E-02	4.72E+00	3.50E-01	1.66E-03	6.03E-03	5.66E-02	8.44E-04	-1.95E-02
EP-terrestrial	mol Ne	1.03E+01	6.81E+00	2.17E-01	1.73E+01	3.88E+00	1.82E-02	6.56E-02	6.39E-01	9.21E-03	-2.14E-01
POCP (“smog”)	kg NMVOCe	2.76E+00	2.42E+00	9.18E-02	5.26E+00	1.08E+00	5.43E-03	2.70E-02	1.89E-01	3.30E-03	-7.26E-02
ADP-minerals & metals	kg Sbe	3.09E-03	1.02E-03	4.02E+00	4.02E+00	9.43E-05	1.43E-07	1.50E-05	1.51E-03	4.96E-07	-2.39E-04
ADP-fossil resources	MJ	9.78E+03	4.84E+03	5.35E+02	1.52E+04	7.86E+02	5.19E+00	7.81E+01	2.88E+02	7.66E+00	-2.01E+02
Water use	m ³ e depr.	4.24E+02	2.22E+01	1.12E+03	1.57E+03	2.57E+00	1.34E-02	3.86E-01	5.62E+00	2.21E-02	-4.89E+00

1) GWP = Global Warming Potential; EP = Eutrophication potential; POCP = Photochemical ozone formation; ADP = Abiotic depletion potential.

2) Disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health - The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

3) Required characterisation method and data for EP-freshwater are in kg P-eq. Multiply by 3,07 to get PO₄e.

ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS

Additional indicators are not declared in this EPD.

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	C1	C2	C3	C4	D
Renew. PER as energy	MJ	1.06E+03	7.66E+01	3.54E+03	4.68E+03	7.84E+00	3.26E-02	1.07E+00	5.28E+01	7.39E-02	-1.75E+01
Renew. PER as material	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of renew. PER	MJ	1.07E+03	7.66E+01	3.54E+03	4.68E+03	7.84E+00	3.26E-02	1.07E+00	5.23E+01	4.44E-02	-1.75E+01
Non-re. PER as energy	MJ	1.13E+04	4.84E+03	4.27E+02	1.65E+04	7.86E+02	5.19E+00	7.81E+01	2.88E+02	7.66E+00	-2.01E+02
Non-re. PER as material	MJ	2.47E+00	0.00E+00	0.00E+00	-1.17E-01	0.00E+00	0.00E+00	0.00E+00	-2.23E+00	-1.17E-01	0.00E+00
Total use of non-re. PER	MJ	1.13E+04	4.84E+03	4.27E+02	1.65E+04	7.86E+02	5.19E+00	7.81E+01	2.86E+02	7.54E+00	-2.01E+02
Secondary materials	kg	9.03E+02	2.23E+00	6.91E-01	9.06E+02	3.49E-01	2.15E-03	3.32E-02	0.00E+00	0.00E+00	1.32E+01
Renew. secondary fuels	MJ	3.26E-02	2.47E-02	2.76E-01	3.32E-01	1.88E-03	5.63E-06	4.22E-04	1.64E-02	3.99E-05	-1.96E-03
Non-ren. secondary fuels	MJ	2.85E-04	0.00E+00	0.00E+00	2.85E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	m ³	2.35E+01	6.04E-01	1.36E-01	2.43E+01	6.65E-02	3.32E-04	1.15E-02	1.29E-01	7.97E-03	-7.90E-02

4) PER = Primary energy resources

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	C1	C2	C3	C4	D
Hazardous waste	kg	1.40E+01	6.86E+00	4.11E+00	2.50E+01	1.01E+00	5.82E-03	1.32E-01	1.90E+00	8.46E-03	-7.23E+00
Non-hazardous waste	kg	1.76E+02	1.38E+02	3.87E+01	3.52E+02	1.61E+01	8.48E-02	2.45E+00	7.49E+01	5.00E+01	-8.71E+01
Radioactive waste	kg	1.91E-01	1.38E-03	4.20E-04	1.92E-01	1.28E-04	5.42E-07	1.67E-05	6.34E-04	1.17E-06	2.10E-04

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	C1	C2	C3	C4	D
Components for re-use	kg	0.00E+00									
Materials for recycling	kg	0.00E+00	0.00E+00	2.12E+01	2.12E+01	0.00E+00	0.00E+00	0.00E+00	9.50E+02	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00									
Exported energy	MJ	0.00E+00									

SCENARIO DOCUMENTATION

Manufacturing energy scenario documentation (A3)

Scenario parameter	Value
Electricity data source and quality	Large hydropower electricity generation (Probas)
Electricity kg CO ₂ e / kWh	0.000806
Heating data source and quality	Heat production, natural gas, at boiler condensing modulating >100kW (ecoinvent)
Heating kg CO ₂ e / MJ	0.0703

Transport scenario documentation (A4)

Scenario parameter	Value
Specific transport CO ₂ e emissions, kg CO ₂ e / tkm	0.086 by lorry, 0.11 by ferry
Average transport distance, km	85 by lorry, 380 by ferry
Capacity utilization (including empty return) %	100
Bulk density of transported products	7850
Volume capacity utilization factor	100

End of life scenario documentation (C1-C4)

Scenario parameter	Value
Collection process – kg collected separately	1000
Collection process – kg collected with mixed waste	0
Recovery process – kg for re-use	0
Recovery process – kg for recycling	950
Recovery process – kg for energy recovery	0
Disposal (total) – kg for final deposition	50
Scenario assumptions e.g., transportation	End-of-life product is transported 50 km with an average lorry.

DATABASES AND SOFTWARE

The calculations were conducted using One Click LCA's cloud-based LCA software. The source of LCA data is supplier-specific EPDs, Ecoinvent 3.10 and 3.11 (2024) and Probas (2024). JRC characterization factors EF 3.1 have been used.

BIBLIOGRAPHY

ISO 14025:2010 Environmental labels and declarations - Type III environmental declarations. Principles and procedures.

ISO 14040:2006 Environmental management. Life cycle assessment. Principles and frameworks.

ISO 14044:2006 Environmental management. Life cycle assessment. Requirements and guidelines.

ISO 21930:2017 Sustainability in buildings and civil engineering works. Core rules for environmental product declarations of construction products and services.

Ecoinvent database v3.10.1, v3.11

Probas (2024) database

EN 15804:2012+A2:2019 Sustainability in construction works - Environmental product declarations - Core rules for the product category of construction products.

RTS PCR (English version, 12.11.2024)

Primed and painted steel structures LCA background report. January 2026

International EPD System. PCR 2019:14 version 2.0.1

World Steel Association. 2022. Steel industry key facts.